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Notice of Allowability

Application No.

09/915,502

Examiner

Anika Talapatra

Applicant(s)

HELLER ET AL.

Art Unit

2631

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to Applicant Arguments or Remarks Made in an Amendment, 1/6/2005.
2. ☒ The allowed claim(s) is/are 1-10.
3. ☒ The drawings filed on 7/27/2001, 1/6/2005 are accepted by the Examiner.
4. ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 - a) ☒ All b) ☐ Some* c) ☐ None of the:
 1. ☒ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

* Certified copies not received: _____.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.
THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.

5. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
 6. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
 - (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
 - 1) ☐ hereto or 2) ☐ to Paper No./Mail Date _____.
 - (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date _____.
- Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).
7. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

- | | |
|--|--|
| 1. <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 5. <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 2. <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 6. <input checked="" type="checkbox"/> Interview Summary (PTO-413),
Paper No./Mail Date <u>3/7/2005</u> . |
| 3. <input checked="" type="checkbox"/> Information Disclosure Statements (PTO-1449 or PTO/SB/08),
Paper No./Mail Date <u>1/6/2005</u> | 7. <input checked="" type="checkbox"/> Examiner's Amendment/Comment |
| 4. <input type="checkbox"/> Examiner's Comment Regarding Requirement for Deposit
of Biological Material | 8. <input checked="" type="checkbox"/> Examiner's Statement of Reasons for Allowance |
| | 9. <input type="checkbox"/> Other _____. |

DETAILED ACTION

EXAMINER'S AMENDMENT

An examiner's amendment to the record appears below. Should the changes and/or additions be unacceptable to applicant, an amendment may be filed as provided by 37 CFR 1.312. To ensure consideration of such an amendment, it **MUST** be submitted no later than the payment of the issue fee.

1. This Office Action is responsive to the Applicant Arguments or Remarks Made in an Amendment filed on 1/6/2005.
2. The information disclosure statement (IDS) submitted on 1/6/2005 is in compliance with the provisions of 37 CFR 1.97. Accordingly, the information disclosure statement is being considered by the examiner.
3. Authorization for this examiner's amendment was given in a telephone interview with Attorney Martin Geissler on 4/7/2005.

The application has been amended as follows:

IN THE CLAIMS:

- i. In claim 3, line 1, the term "linear" is removed between "wherein the" and "regression..."
- ii. In claim 4, line 1, the term "linear" is removed between "wherein the" and "regression..."

REASONS FOR ALLOWANCE

4. The following is an examiner's statement of reasons for allowance: Claims 1 to 10 are allowed. The following is an examiner's statement of reasons for allowance: Claims 1 to 10 are allowed because a search of prior art of record failed to teach, either alone or in combination, a process or apparatus for correcting a resampler by performing a non-linear operation on the input signal, spectrally shifting the input signal by one of the symbol and chip frequencies, determining the phase of the shifted spectral line at one of the symbol and chip frequencies as a function of the sampling time points, and correcting one of the resampling factor and a time shift of the output signal by a time correction value based on a linear regression of the phase of the shifted spectral line at one of the symbol and chip frequencies as a function of the sample points.

Limberg et al. (U.S. Patent 6377312) (hereafter referred to as Limberg) teaches a channel equalizer response as supplied at the sampling rate k times symbol rate is compared to the signal estimating the transmitted symbols as re-sampled to the sampling rate k times symbol rate, in order to develop decision-feedback error signal at the sampling rate k times symbol rate (Limberg, Summary of the Invention; figure 1). Limberg fails to teach a non-linear operation on the input signal so that a spectral line arises at one of the chip frequencies.

Lakkis et al. (U.S. Patent 6768780) (hereafter referred to as Lakkis) teaches a timing synchronization method comprising a non-linear operation on the input signal, an algorithm calculating the timing offset by evaluating the spectral component at the symbol clock frequency, and interpolation of the timing offset (Lakkis, column 8, lines 26-58; figure 4). Lakkis fails to teach a resampling factor for changing the input sampling rate by the resampling factor. Lakkis fails to teach a spectrally shifting the input signal by one of the symbol and chip frequencies.

Rothermel et al. (U.S. Patent 5559513) is also additionally cited because it is considered pertinent to the claimed invention.

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Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Anika Talapatra whose telephone number is 571-272-6039. The examiner can normally be reached Monday to Friday, 08:00-16:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mohammad Ghayour can be reached on 571-272-3021. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

A.T.

PHUONG PHU
PRIMARY EXAMINER

Phung Phu 4/11/05